

unisine

# LOW VOLTAGE INVERTER

FGI SCIENCE AND TECHNOLOGY CO., LTD.

+86 0537 4922168

info@fgidrive.com

www.fgidrive.com

FGI Industrial Park, Jincheng Road  
Middle, Wenshang, Jining City, China



## Company Introduction

Founded in 1970, FGI Science and Technology Co., Ltd., is a leading national high-tech state-owned enterprise, specializing in the research, development, production, sales and service of frequency inverters, medium voltage drive, Static Var Generator (SVG), explosion-proof products (inverters & SVGs) and energy storage products.

As the core manufacturer of industrial automation products in China, FGI has established itself as a trusted manufacturer in the market. With over 900 dedicated professional staffs and a self-owned industrial park spanning 170,000m<sup>2</sup>, we proudly became a public listed company in 2021, further solidifying our commitment to excellence.

We look forward to the opportunity of working together and achieving mutual success.

### No.1

In 2023, FGI was honored by the Chinese Ministry of Industry and Information Technology (MIIT) as the 1st manufacturer of high-voltage Static Var Generators (SVGs) in China.



**170,000** m<sup>2</sup>

Covering an area of 170,000 square meters.



**100,000** m<sup>2</sup>

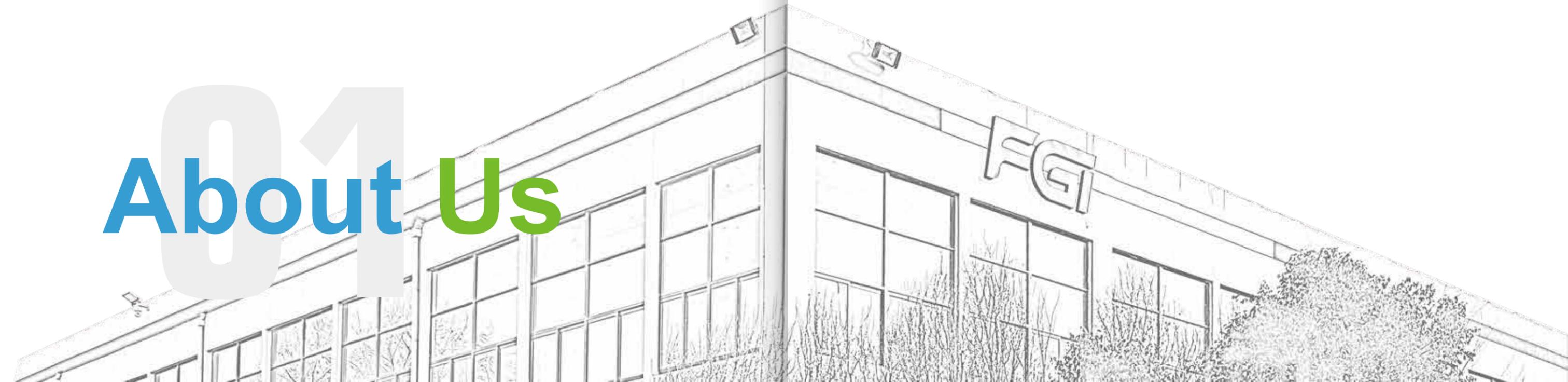
Factory building area 100,000 square meters.



**200,000<sup>+</sup>** PCS

Annual production capacity of 200,000 PCS.

# About Us



# 04 Introduction of FD100



The **FD100** series uses DSP control system as the platform, current vector control technology, and multiple protection methods, which can be applied to asynchronous motors to provide excellent driving performance.

①

Book style structural design

②

60% year-on-year reduction in volume

③

Modular structural layout

④

Supports dual row display



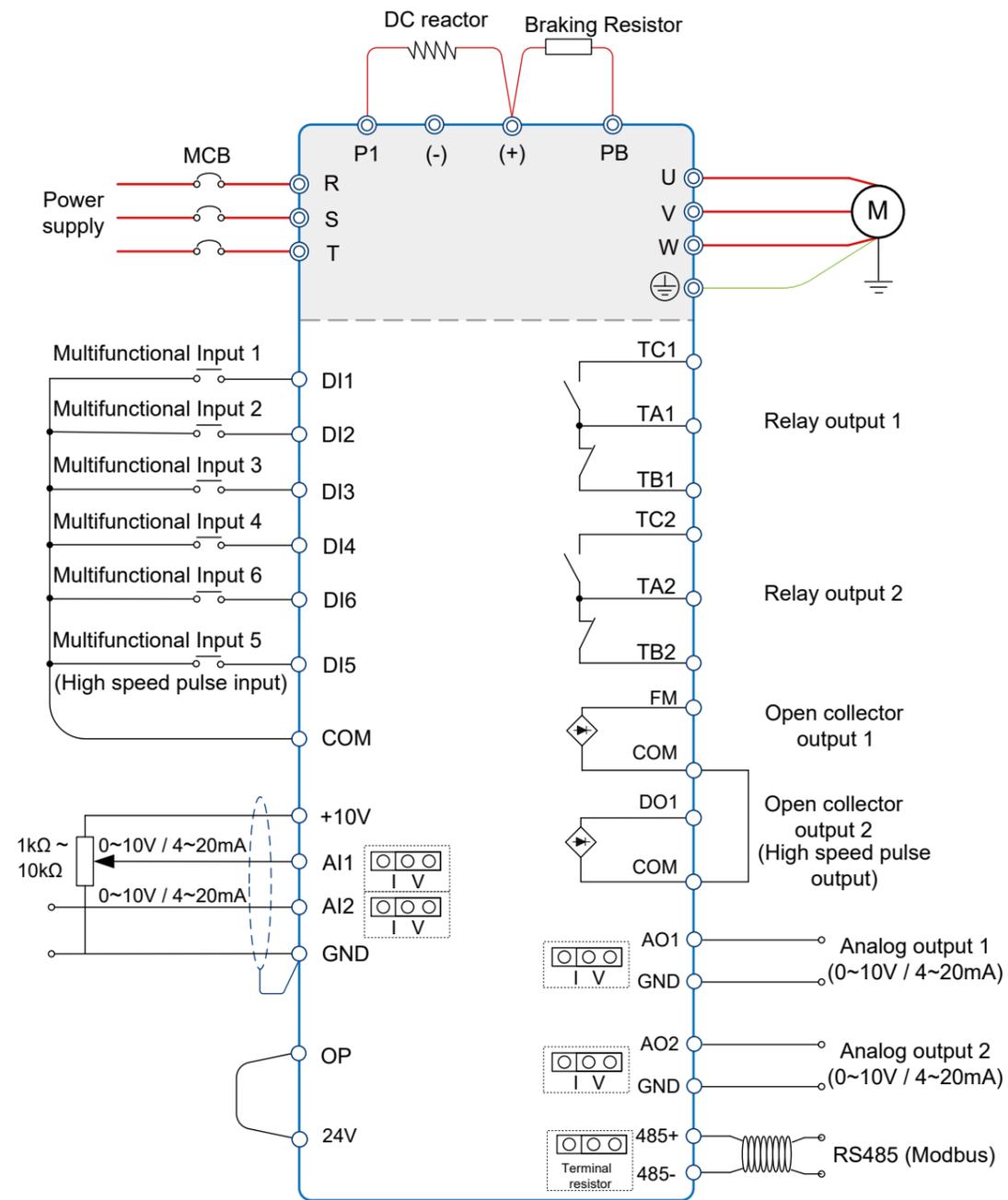
Technical Specifications

4.1

Item	Technical Index	Specification
Input	Input voltage	AC 3PH 220V(-15%) ~ 240V(+10%) AC 3PH 380V(-15%) ~ 440V(+10%) AC 3PH 520V(-15%) ~ 690V(+10%)
	Input frequency	50 / 60Hz (±5%)
Output	Output voltage	0~rated input voltage
	Output frequency	Vector control: 0~500Hz
Control Features	Control mode	V/f control Sensorless vector control (SVC) Close-loop vector control (FVC)
	Operation command mode	Keypad control Terminal control Serial communication control (Modbus)
	Frequency setting mode	Digital setting, analog setting, pulse frequency setting, serial communication setting, multi-step speed setting & simple PLC, PID setting, etc. These frequency settings can be combined & switched in various modes.
	Overload capacity	G model: 150% / 60s, 180% / 3s P model: 120% / 60s, 150% / 3s
	Starting torque	0.25Hz / 150% (SVC); 0.5Hz / 150% (V/f), 0Hz / 180% (FVC)
	Speed control precision	±0.5% (SVC)
	Carrier frequency	0.5~16.0kHz, automatically adjusted according to temperature and load characteristics
	Frequency accuracy	Digital setting: 0.01Hz Analog setting: maximum frequency ×0.025%
	Torque boost	Automatically torque boost; manually torque boost: 0.1%~30.0%
	V/f curve	Three types: linear, multiple point and square type (1.2 power, 1.4 power, 1.6 power, 1.8 power, square)
	Acceleration / deceleration mode	Straight line/S curve; four kinds of acceleration/deceleration time, range: 0.0~6500.0s
	Braking unit	75kW, optional for build-in
	DC braking	DC braking when starting and stopping DC braking frequency: 0.0Hz~maximum frequency, braking time: 0.0s~36.0s

Item	Technical Index	Specification
Control Features	Jog operation	Jog operation frequency: 0.0Hz~maximum frequency Jog acceleration/deceleration time: 0.1s~6500.0s
	Simple PLC & multi-step speed operation	It can realize a maximum of 16 multi-step speeds running via the built-in PLC or control terminal.
	Built-in PID	Built-in PID control to easily realize the close loop control of the process parameters (such as pressure, temperature, flow, etc.)
	Automatic voltage regulation	Keep output voltage constant automatically when input voltage fluctuating
Control Function	Torque limit	"Rooter" characteristics, limit the torque automatically and prevent frequent over-current tripping during the running process
	Wobble frequency control	Multiple triangular-wave frequency control, special for textile
	Timing/length/counting control	Timing/length/counting control function
	Over-voltage & over-current stall control	Limit current & voltage automatically during the running process, prevent frequent over-current & over-voltage tripping
	Fault protection function	Comprehensive protections include over-current, over-voltage, under-voltage, overheating, default phase, overload, shortcut, etc., can record the detailed running status during failure & has fault automatic reset function
Input / output terminals	Input terminals	Programmable digital inputs: DI1~DI6, DI5 can be used as high-speed pulse input terminal.  Programmable analog inputs: AI1, AI2 (compile with both 0~10V & 4~20mA).
	Output terminals	Programmable digital outputs: 2 relay outputs 2 open-collector outputs, FM can be set as high speed pulse output terminal (0~100kHz).  Programmable analog outputs: AO1, AO2:(compile with both 0~10V & 4~20mA).
	Communication terminals	Standard RS485 communication interface, support MODBUS-RTU communication protocol
	Human machine interface	LED display Display frequency setting, output frequency, output voltage, output current, etc. Two lines display
Environment	Ambient temperature	-10 C ~ 40 C (>40 C, output derated), without direct sunshine.
	Humidity	95%RH or less (non-condensing)
	Altitude	≤1000M: output rated power, >1000M: output derated
	Storage temperature	-20 C ~ 60 C

System Wiring 4.2



Product Model Description 4.3

# FD100 – 90G/110P – T4

①	Series code	FD100: High performance variable frequency drive FD100S: Special software for synchronous motor control
②	Rated power	90G: Constant torque load 90kW 110P: Variable torque load 110kW
③	Rated Voltage	T2: AC 3PH 220V(-15%) ~ 240V(+10%) T4: AC 3PH 380V(-15%) ~ 440V(+10%) T6: AC 3PH 520V(-15%) ~ 690V(+10%)



FGI SCIENCE AND TECHNOLOGY CO., LTD.

Selection Guide

4.4

3AC 380V (-15%)~440V (+10%)

Power	Suitable Motor (kW)	Rated Output Current (A)
FD100-1R5G/2R2P-T4	1.5/2.2	3.8/5.1
FD100-2R2G/4P-T4	2.2/4	5.1/9
FD100-4G/5R5P-T4	4/5.5	9/13
FD100-5R5G/7R5P-T4	5.5/7.5	13/17
FD100-7R5G/11P-T4	7.5/11	17/25
FD100-11G/15P-T4	11/15	25/32
FD100-15G/18R5P-T4	15/18.5	32/37
FD100-18R5G/22P-T4	18.5/22	37/45
FD100-22G/30P-T4	22/30	45/60
FD100-30G/37P-T4	30/37	60/75
FD100-37G/45P-T4	37/45	75/91
FD100-45G/55P-T4	45/55	91/112
FD100-55G/75P-T4	55/75	112/152
FD100-75G/90P-T4	75/90	152/176
FD100-90G/110P-T4	90/110	176/210
FD100-110G/132P-T4	110/132	210/253
FD100-132G/160P-T4	132/160	253/304
FD100-160G/185P-T4	160/185	304/350
FD100-185G/200P-T4	185/200	350/380
FD100-200G/220P-T4	200/220	380/426
FD100-220G/250P-T4	220/250	426/465
FD100-250G/280P-T4	250/280	465/520
FD100-280G/315P-T4	280/315	520/585
FD100-315G/355P-T4	315/355	585/650
FD100-355G/400P-T4	355/400	650/725
FD100-400G/450P-T4	400/450	725/820
FD100-450G/500P-T4	450/500	820/860
FD100-500G/560P-T4	500/560	860/950
FD100-630G/710P-T4	630/710	950/1100
FD100-710G/800P-T4	710/800	110/1250

3AC 220V~240V (±15%)

Power	Suitable Motor (kW)	Rated Output Current (A)
FD100-1R5G/2R2P-T2	1.5/2.2	7.0/10.0
FD100-2R2G/4P-T2	2.2/4	10.0/16
FD100-4G/5R5P-T2	4/5.5	16/20
FD100-5R5G/7R5P-T2	5.5/7.5	20/30
FD100-7R5G/11P-T2	7.5/11	30/45
FD100-11G/15P-T2	11/15	45/60
FD100-15G/18R5P-T2	15/18.5	60/75
FD100-18R5G/22P-T2	18.5/22	75/90
FD100-22G/30P-T2	22/30	90/112
FD100-30G/37P-T2	30/37	112/152
FD100-37G/45P-T2	37/45	152/176
FD100-45G/55P-T2	45/55	176/210
FD100-55G/75P-T2	55/75	210/304
FD100-75G/90P-T2	75/90	304/350

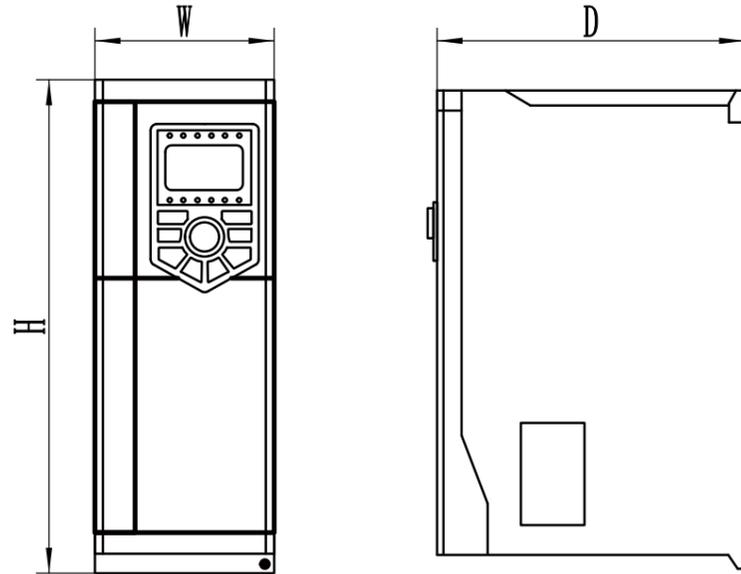
LOW  
VOLTAGE  
INVERTER



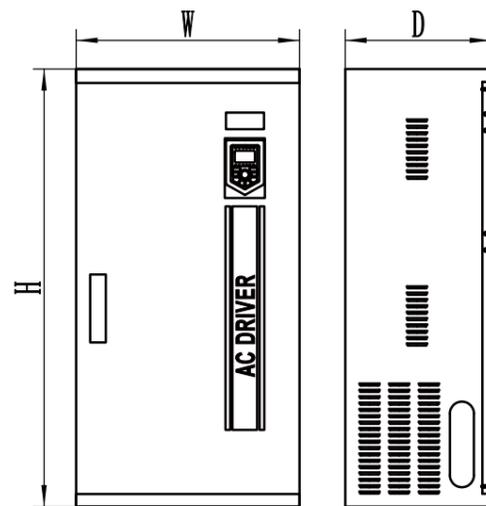
External and Keypad Dimensions

4.5

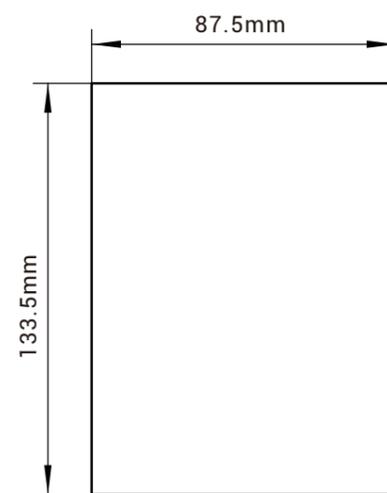
A: Product outlook (1.5~132kW):



B: Product outlook (≥160kW):



C: Extension keypad bracket hole size



Dimension (3AC 380V~440V)

Power (kW)	Outlook dimensions (mm)		
	H	W	D
1.5~2.2	200	86	185
4~5.5	238	97	185
7.5~11	320	116	210
15~22	383	142	257
30~37	445	189	252
45~75	565	240	315
90~110	638	268	350
132~160	738	350	405
185~220	1025	525	350
250~315	1150	555	355
355~450	1450	650	390
500~560	1800	800	550
630~710	1800	800	700

Dimension (3AC 220V~240V)

Power (kW)	Outlook dimensions (mm)		
	H	W	D
1.5~2.2	238	97	185
4~5.5	320	116	210
7.5~11	383	142	257
15~18.5	445	189	252
22~37	565	240	315
45~55	638	268	350
160	738	350	405

Optional PG card

# 05 Introduction of FD100M



- ① Good dynamic performance
- ② Stable performance
- ③ Rich combination functions
- ④ Standard RS485 communication

The **FD100M** series uses DSP control system as the platform, current vector control technology, and multiple protection methods, which can be applied to asynchronous motors to provide excellent driving performance.

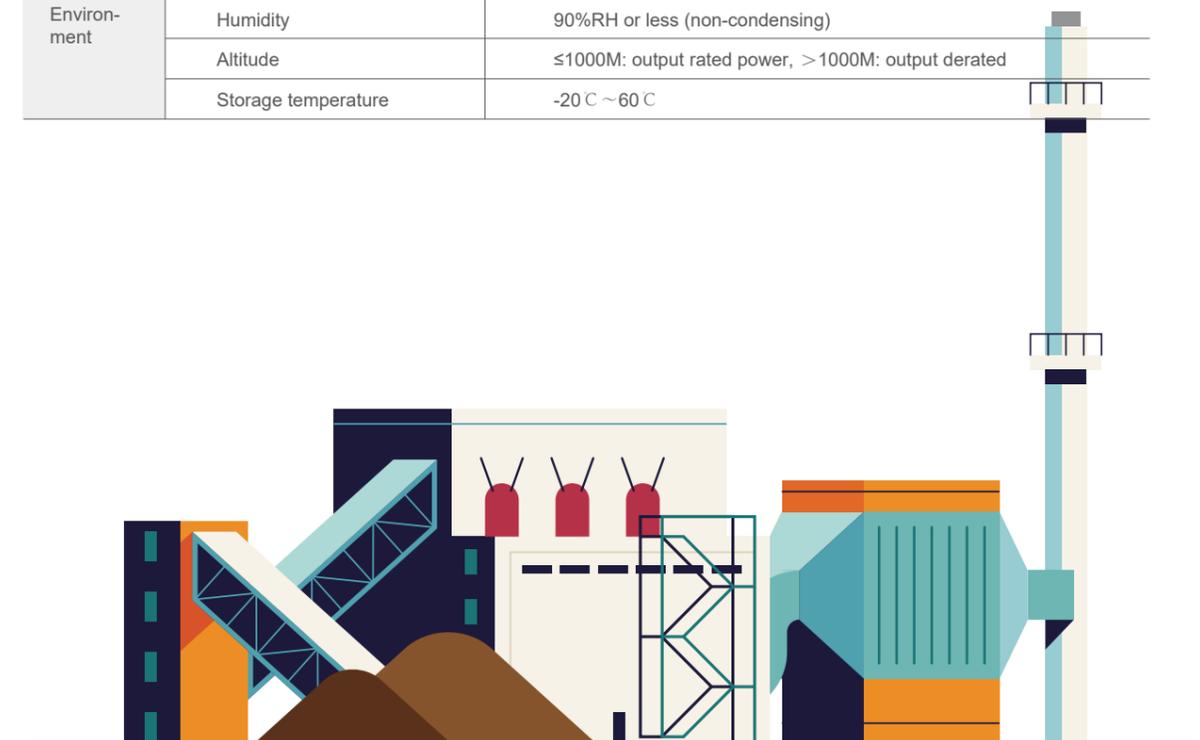


Technical Specifications

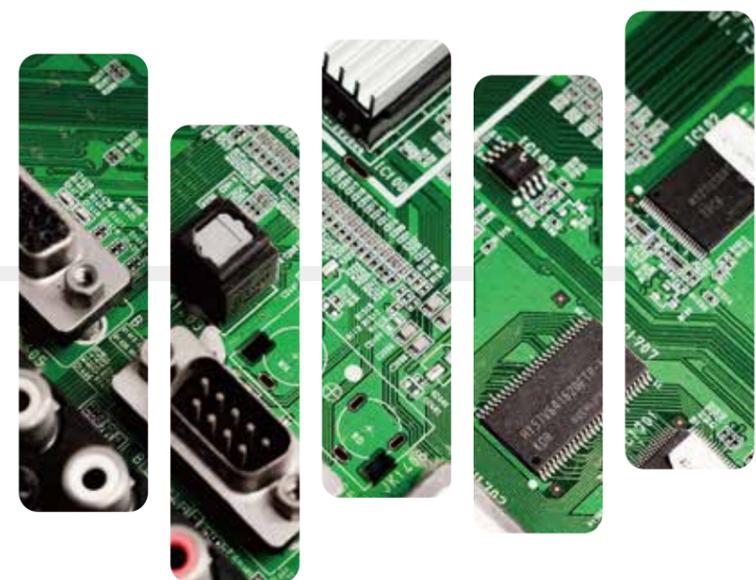
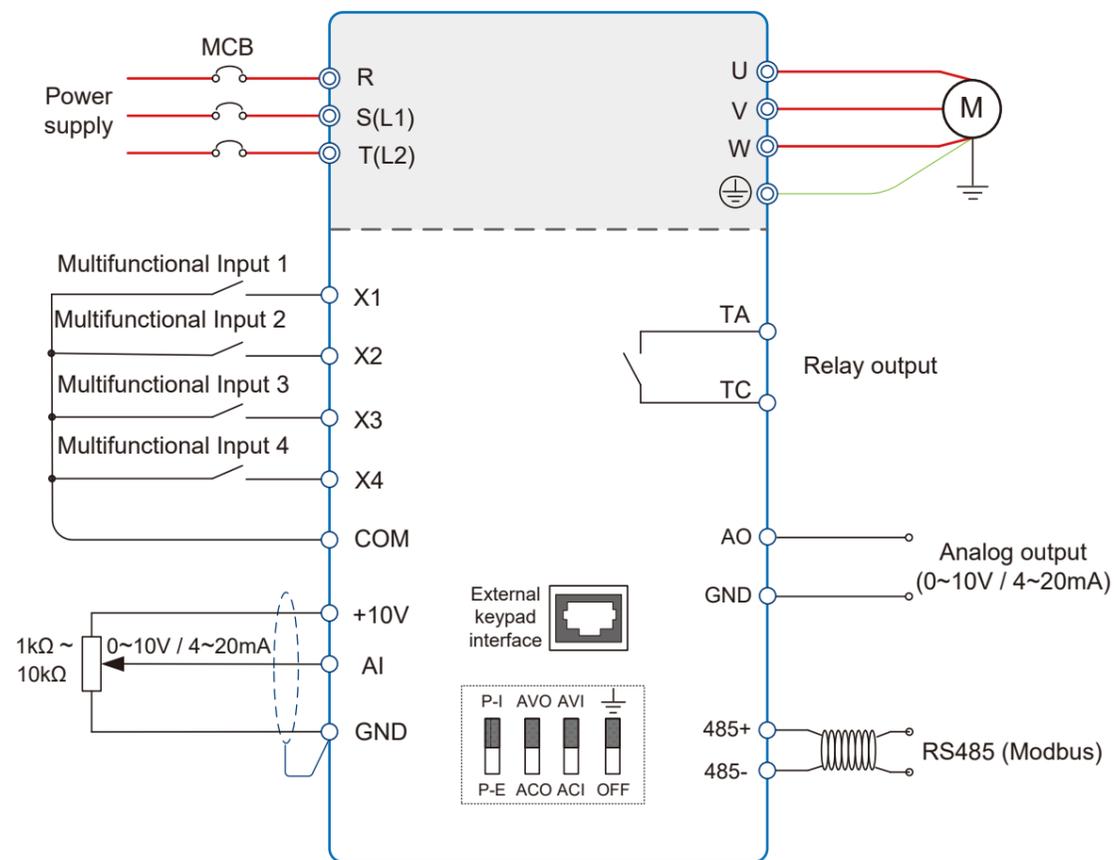
5.1

Item	Technical Index	Specification
Input	Input voltage	AC 1PH 220V(-15%) ~ 240V(+10%) AC 3PH 380V(-15%) ~ 440V(+10%)
	Input frequency	50 / 60Hz ±5%
Output	Output voltage	0~rated input voltage
	Output frequency	0~200Hz
Control Features	Control mode	V/f control Sensorless vector control Torque control
	Operation command mode	Keypad control Terminal control Serial communication control (Modbus)
	Frequency setting mode	Digital setting, analog setting, Modbus communication setting, multi-step speed setting & simple PLC, PID setting, etc. These frequency settings can be combined & switched in various modes.
	Overload capacity	120% / 60S
	Starting torque	0.25Hz/150% (SVC); 0.5Hz/150% (V/f)
	Speed control precision	±0.5% (V/f), ±0.2% (SVC),
	Carrier frequency	2.0~16.0kHz
	Frequency accuracy	Digital setting: 0.01Hz Analog setting: maximum frequency ×0.05%
	Torque boost	Automatically torque boost; manually torque boost: 0.1%~30.0%
	V/f curve	Three types: linear, multiple point and square type
	Acceleration/deceleration mode	Two groups of acceleration/deceleration time, range: 0.1s~999.9s
	DC braking	DC braking when starting and stopping DC braking frequency: 0.0Hz~maximum frequency, braking time: 0.0s~25.0s
	Jog operation	Jog operation frequency: 0.0Hz~maximum frequency Jog acceleration/deceleration time: 0.1s~3600.0s
	Simple PLC & multi-step speed operation	It can realize a maximum of 16 multi-step speeds running via the built-in PLC or control terminal.
	PID	Standard PID function build-in

Item	Technical Index	Specification
Control Function	Over-voltage & over-current stall control	Limit current & voltage automatically during the running process, prevent frequent over-current & over-voltage tripping
	Fault protection function	Comprehensive protections include over-current, over-voltage, under-voltage, overheating, default phase, overload, shortcut, etc., can record the detailed running status during failure & has fault automatic reset function
Input / output terminals	Input terminals	4 multifunctional programmable digital input; 1 analog input AI: 0~10V / 4~20mA
	Output terminals	1 normal open relay output (TA, TC) 1 analog output AO: 0~10V / 4~20mA
	Communication	RS485 interface, MODBUS-RTU communication protocol
Human machine interface	LED display	Display frequency setting, output frequency, output voltage, etc.
	Multifunction key	QUICK/JOG key, can be used as multifunction key
Environment	Ambient temperature	-10°C ~ 40°C, without direct sunshine.
	Humidity	90%RH or less (non-condensing)
	Altitude	≤1000M: output rated power, >1000M: output derated
	Storage temperature	-20°C ~ 60°C



System Wiring 5.2



Product Model Description 5.3

**FD100M – 1R5G – S2**

①	Series code	FD100: High performance variable frequency drive
②	Rated power	1R5G: 1.5kW heavy load
③	Rated Voltage	S2: AC 1PH 220V(-15%) ~ 240V(+10%) 4: AC 3PH 380V(-15%) ~ 440V(+10%)



FGI SCIENCE AND TECHNOLOGY CO., LTD.

Selection Guide

5.4

1AC 220V ±15%

Power	Suitable Motor (kW)	Rated Output Current (A)
0.4kW	0.4	2.3
0.75kW	0.75	4
1.5kW	1.5	7
2.2kW	2.2	9.6

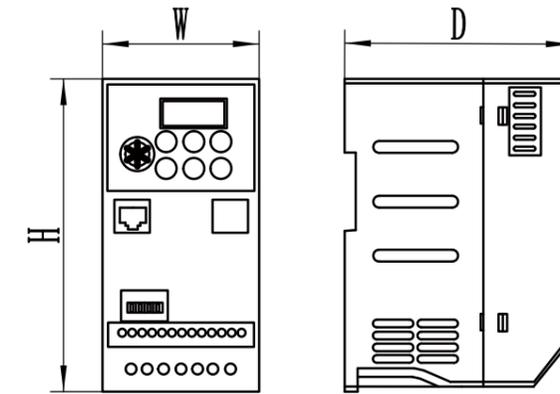


3AC 380V ±15%

Power	Suitable Motor (kW)	Rated Output Current (A)
0.75kW	0.75	2.5
1.5kW	1.5	4.2
2.2kW	2.2	5.5
4kW	4	9
5.5kW	5.5	13

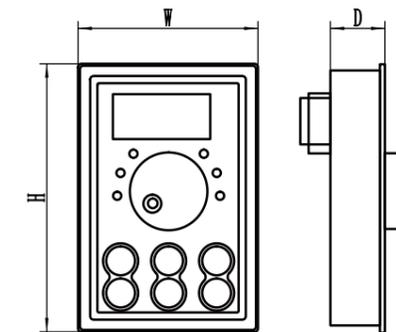
Outlook Drawing

5.5



Inverter outlook dimensions

Power (kW)	Outlook dimensions (mm)		
	H	W	D
0.75~2.2KW	142	63	104.5
4~5.5KW	180	78	126.4



Keyboard base hole size

Power (kW)	Outlook dimensions (mm)		
	H	W	D
All Series	79	53	15.9

# 06 Application Fields



> Petrochemical



> Urban substation



> Wood processing



> Power station



> Lithium current waterline



> Logistics transportation



> Food processing



> Metallurgy



> Packaging assembly line